# Supporting Information

for

**Thienothiophene based organic light-emitting diode: synthesis, photophysical properties and application**

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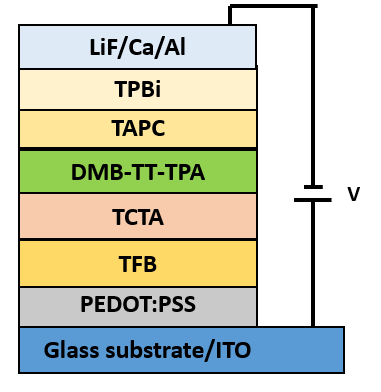
**General experimental device methods and theoretical computation data**

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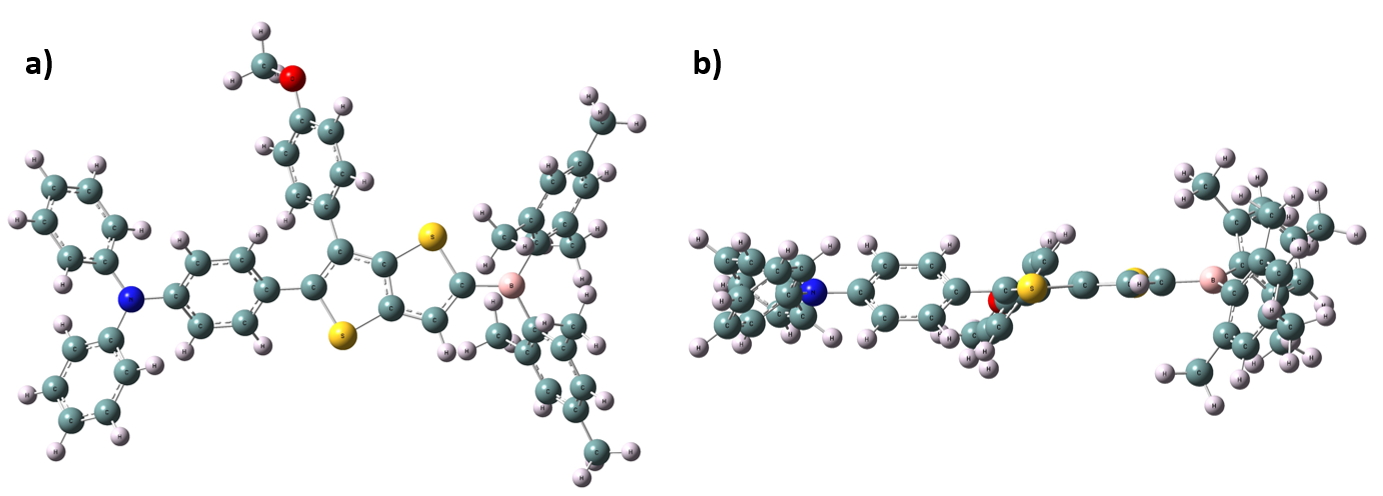
# General experimental device methods

TFB (Cambridge Display Technology Ltd.) solution was prepared by dissolving TFB in toluene in 2 mg/mL concentration. Active layer solution was prepared by controlling the host material concentration fixed at 15 mg/mL and blending the emitter at 10 wt% in chlorobenzene. Prepatterned ITO substrates were rinsed in an ultrasonic bath with acetone, isopropyl alcohol, Hellmanex III and deionized water before deposition of top layers. PEDOT: PSS and TFB were deposited on ITO sequentially *via* spin-coating at 2500 and 1000 rpms, respectively. Then, the prepared active layer was spin-coated on annealed TFB (180 °C for 1 h in a nitrogen-glovebox) at 2000 rpms to form a 50 nm film. Afterwards, TPBi, LiF and Ca/Ag were thermally evaporated onto the organic layer under vacuum level of ~5×10-7 mbar. J-V-L characterization (pixel area = 0.045 cm2) was performed using a Keithley 2400 and Konica Minolta LS-110 Luminance Meter. OLED emission profile was assumed to be Lambertian. EL spectrum was measured using an Ocean Optics USB 2000 charge-coupled device spectrophotometer.

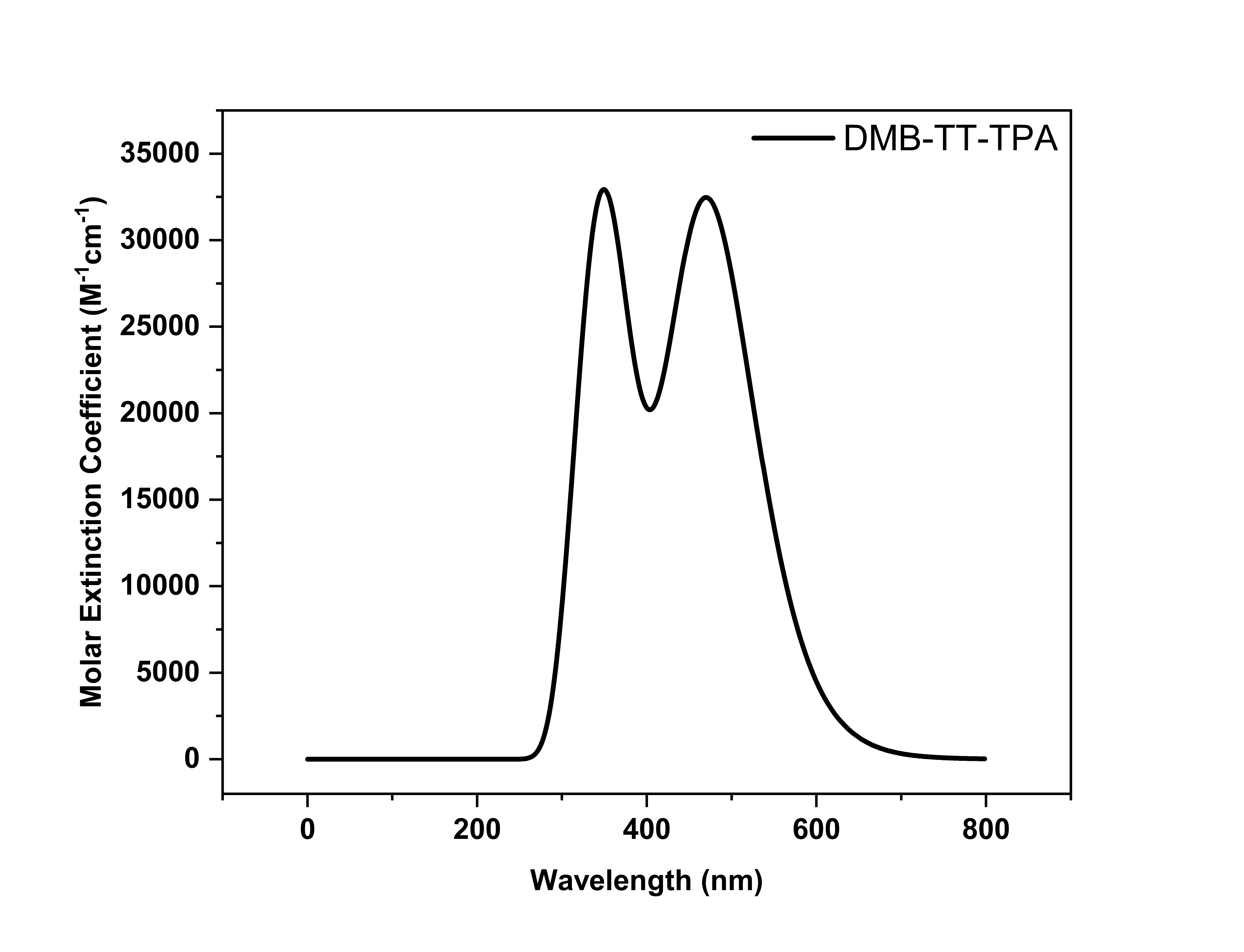


**Figure S1:** Schematic illustration of the device configuration.

# Computational data



**Figure S3:** Optimized geometry of **DMB-TT-TPA** of **a)** top view and **b)** side view.



**Figure S3:** Theoretical UV-Vis spectrum of **DMB-TT-TPA.**